## IN THE DRAWINGS

Please replace Drawing Sheet 2, including Fig. 3 and Fig. 4, with the attached Replacement Sheet, including amended Fig. 3 and original Fig. 4.

Please replace Drawing Sheet 3, including Fig. 5, with the attached Replacement Sheet, including amended Fig. 5.

For the Examiner's convenience, changes made to Fig. 3 and to Fig. 5 are noted in red in the attached Annotated Sheets.

## REMARKS

Claims 1-39 were presented for examination and were pending in this application. In an Official Action dated July 11, 2005, claims 1-39 were rejected. Applicant thanks Examiner for examination of the claims pending in this application and addresses Examiner's comments below.

Applicant herein amends claims 1, 3, 4, 7, 8, and 11-15. Applicant herein cancels claims 2, 6, 9, 10, and 16-39. Applicant herein adds claims 40-59. Applicant respectfully submits that the new claims are fully supported by the specification and are within the scope of protection to which Applicant believes he is entitled. Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

### Amendments to the Specification

Applicant has amended portions of the specification as follows to correct typographical errors noticed during prosecution.

The amendment made to Table 2C on page 18 was made to correct typographical errors, particularly with respect to inputs identified in Figs. 7B and 7C. The amendments made to the paragraph beginning on page 18, line 3, and to the paragraph beginning on page 18, line 10, were made to correct typographical errors, particularly with respect to inputs identified in Figs. 7B and 7C, respectively. The amendment made to the paragraph beginning on page 19, line 15, was made to delete a duplicate sentence and to correct a typographical error. The amendment made to the paragraph beginning on page 20, line 8, was made to correct a typographical error in identifying logic 770 of Fig. 7H.

Applicant respectfully submits that no new matter is introduced as a result of these amendments.

## Amendments to the Drawings

In compliance with 37 C.F.R. § 1.121, Applicant submits and requests acceptance of Replacement Sheets for drawing sheets 2 and 3. Annotated Sheets showing amendments made to Fig. 3 and to Fig. 5 in red ink are also included for the Examiner's convenience.

Applicant has amended Fig. 3 to identify each switching cell with a reference numeral 320. This amendment is supported by the specification in the paragraph beginning on page 3, line 12. Applicant has amended Fig. 5 to identify the first signal propagation path with a bracket and a reference numeral 580 and to identify the second signal propagation path with a bracket and a reference numeral 582. This amendment is supported, for example, by the paragraph beginning on page 9, line 21. Applicant submits that no new matter is introduced as a result of these amendments.

Approval of the Proposed Drawing Changes is respectfully requested. It is also respectfully requested that the Examiner explicitly indicate his approval thereof in the next official communication.

## Objection to the Abstract

The Examiner objected to the Abstract of the Disclosure for using legal phraseology and required correction.

Applicant has amended the Abstract in accordance with the Examiner's comments to remove the legal phraseology. Accordingly, Applicant respectfully requests that Examiner reconsider and withdraw the objection to the Abstract.

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## Objection to the Disclosure

The Examiner has objected to the disclosure because of informalities in the Brief Description of the Drawings, particularly with respect to the original Figure 6B and original Figure 8.

Applicant has amended the paragraph beginning on page 6, line 4, referring to original Figures 6B, and the paragraph beginning on page 6, line 14, referring to original Figure 8, in accordance with the Examiner's comments. Accordingly, Applicant respectfully requests that Examiner reconsider and withdraw the objection to the disclosure.

## Rejection Under 35 U.S.C. § 101

In the 3rd paragraph of the Office Action, the Examiner rejected claims 28-39 as allegedly directed to non-statutory subject matter.

Applicant has canceled claims 28-39 and requests that the objection under 35 U.S.C. § 101 be withdrawn.

## Rejections Under 35 U.S.C. § 102(b)

In the 5th and 6th paragraphs of the Office Action, the Examiner rejected claims 1, 16, and 28 under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,801,975 to Thayer et al. ("Thayer") and by U.S. Patent No. 6,434,583 to Dapper et al. ("Dapper").

Applicant has canceled claims 16 and 28, and respectfully traverses the rejection of claim 1.

Independent claim 1 has been amended to recite "a processing system comprising:"

> a register file …;
> a routing unit … the first input of the routing unit coupled to the output of the register file, the routing unit capable of assembling and selecting a data signal;

> a <u>Banyan</u> switch … the first input of the Banyan switch coupled to the output
> of the routing unit, the Banyan switch capable of controlling information pathways
> and performing routing functions on the data signal; and
>
> an arithmetic logic unit ….

Applicant respectfully submits that amended claim 1 is patentably distinct from both Thayer and Dapper. First, neither Thayer nor Dapper disclose "a routing unit" coupled to the Banyan switch, where the routing unit is "capable of assembling and selecting a data signal," as required by Applicant's claim 1. The presence of the routing unit is advantageous because it selectively aligns and transfers data to the input of the Banyan switch, facilitating computationally advantageous data routing operations. Additionally, the element identified by the Examiner as a switch in Thayer, ORU 124, is a crossbar switch (see, e.g., col. 17, line 55-57). The element identified by the Examiner as a switch in Dapper, routing logic 2634, is a butterfly switch (see, e.g., col. 78, line 10-11). Neither Thayer nor Dapper recite "a Banyan switch," as required by Applicant's claim 1.

Based on the above Amendment and Remarks, Applicants respectfully submit that for at least these reasons claim 1 is patentably distinguishable over the cited references. Therefore, Applicant respectfully requests that Examiner reconsider the rejections and withdraw them.

## Rejections Under 35 U.S.C. 103(a)

Dependent Claims 17-27 and 29-39

In the 8th and 9th paragraphs of the Office Action, the Examiner rejected claims 17-27 and 29-39 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Thayer and Dapper.

Applicant has canceled claims 17-27 and 29-39 and requests that this objection be withdrawn.

Dependent Claims 2-15

In the 10th and 11th paragraphs of the Office Action, the Examiner rejected claims 2-15 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Thayer or Dapper, in view of Goke et al. or Premkumar et al. Applicant has canceled claims 2, 6, 9, and 10, and respectfully traverses the rejection with respect to claims 3-5, 7-8, and 11-15.

Regarding claims 3-5, 7-8, and 11-15, the Examiner stated, "Due to the similarity of claims 3-15 to claims 17-27 and 29-39, they are rejected under a similar rationale." Regarding claims 17-27 and 29-39, the Examiner stated:

> The dependent claims 17-27 and 29-39 detail the functions of the "routing" and "arithmetic logic". These functions are obvious to a person having ordinary skill in the art. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to design the claimed invention according to Thayer et al.'s [or Dapper et al.'s] teachings because the device is a digital processing device having "routing" feature[s] as claimed.

Applicant's respectfully submit that, based on the above quotation, the Examiner has not established a *prima facie* case of obviousness as required under MPEP § 706.02(j) or § 2143.01. Applicant respectfully submits that the rejection does not set forth, for each of claims 3-5, 7-8, and 11-15, elements A-D under MPEP § 706.02(j). In particular, under MPEP § 2143.01, "[t]he fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness."

Applicant further respectfully submits that each of claims 3-5, 7-8, and 11-15 recites patentable subject matter not disclosed or rendered obvious by Thayer or Dapper, or Goke or Premkumar, either alone or in combination.

Regarding claim 3, neither Thayer nor Dapper disclose or render obvious an arithmetic logic unit comprising "a bitwise function unit ... a pipeline register ... and an accumulator ...," as

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required by Applicant's claim 3. In particular, Dapper's row-column array 2632 is comprised merely of 32 adder/subtractor accumulators 2633 (col. 77, lines 50-51) and is nowhere identified as an ALU at all.

Regarding claims 4-5, Applicant's claims further define the Banyan switch. Neither Thayer nor Dapper disclose or render obvious the use of a Banyan switch, much less details of Banyan switch configurations. While Goke and Premkumar discuss Banyan switches for multi-processor networking, they do not disclose or render obvious the use or configuration of a Banyan switch in the datapath of a single processor.

Regarding claims 7, 12, 14, and 15, Applicant's claims recite, or further define, a switch control unit coupled to the Banyan switch. The switch control unit is not a detail of the function of the switch or of the arithmetic logic. Thus, Applicant respectfully submits that the Examiner's rejection does not properly apply to claims 7, 12, 14, or 15.

Regarding claims 8 and 13, Applicant's claims recite a constant generator, which is not a detail of the function of the switch or of the arithmetic logic. Thus, Applicant respectfully submits that the Examiner's rejection does not properly apply to claims 8 or 13.

Regarding claim 11, Applicant's claim further defines the routing unit of claim 1. As discussed above, neither Thayer nor Dapper disclose a routing unit "capable of assembling and selecting a data signal" to selectively align and transfer data to the input of the Banyan switch, facilitating computationally advantageous data routing operations. Neither does Thayer or Dapper render obvious the routing unit. Furthermore, neither Goke nor Premkumar, which deal with Banyan networked multiple processors, disclose or render obvious a routing unit as required by Applicant's claim 1.

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Based on the above Amendments and Remarks, Applicants respectfully submit that for at least these reasons claims 3-5, 7-8, and 11-15 are patentably distinguishable over the cited references, both alone and in combination. Therefore, Applicants respectfully request that Examiner reconsider the rejection and withdraw it.

## CONCLUSION

Applicant has added new claims 40-59 for which Applicant requests consideration and examination. Applicant respectfully submits that these are supported by the specification and are commensurate within the scope of protection to which Applicant believes he is entitled.

In addition, Applicant respectfully submits that claims 1, 3-5, 7, 8, and 11-15, as presented herein, as well as claims 40-59, are patentably distinguishable over all of the art of record. Therefore, Applicants request reconsideration of the basis for the rejections to claims 1, 3-5, 7, 8, and 11-15, and requests allowance of all of the claims.
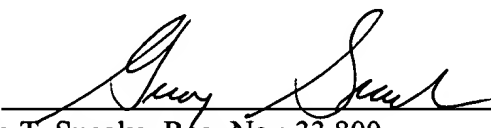
Finally, Applicant respectfully invites Examiner to contact Applicant's representative at the number provided below if Examiner believes it will help expedite furtherance of this application.

Respectfully submitted,
MICHAEL A. BAXTER

Dated: 10/11/05

By: _____
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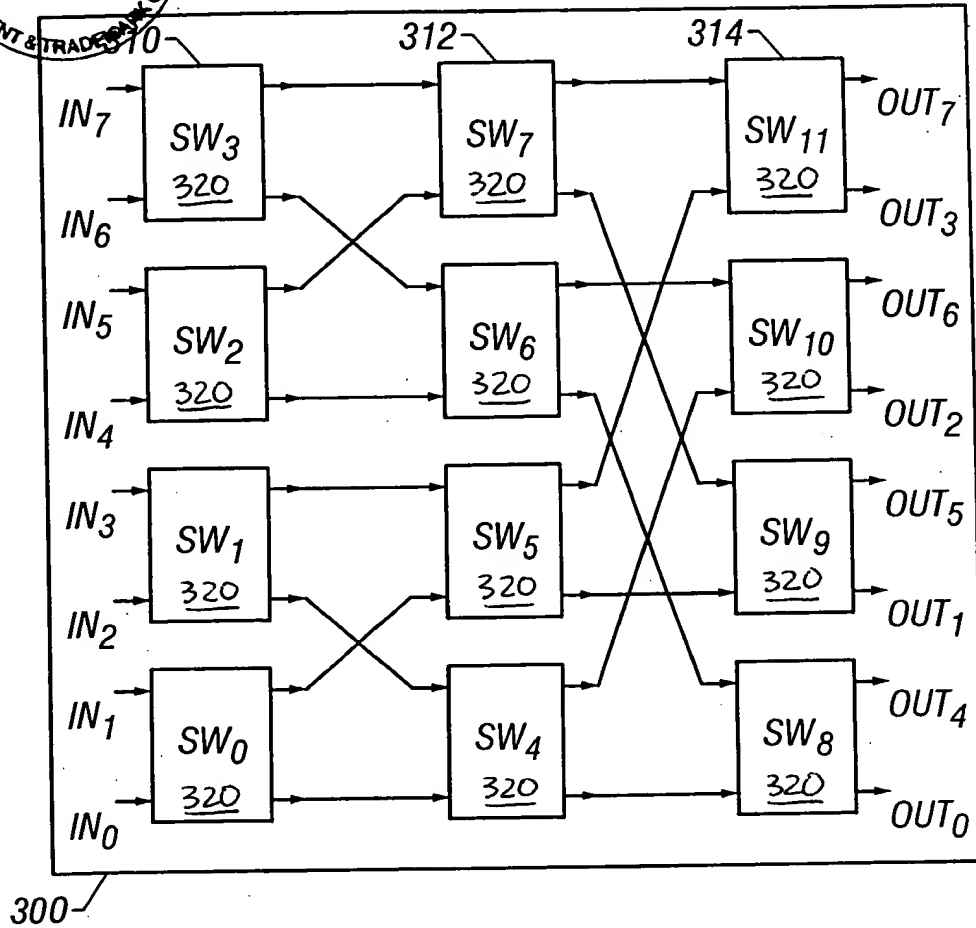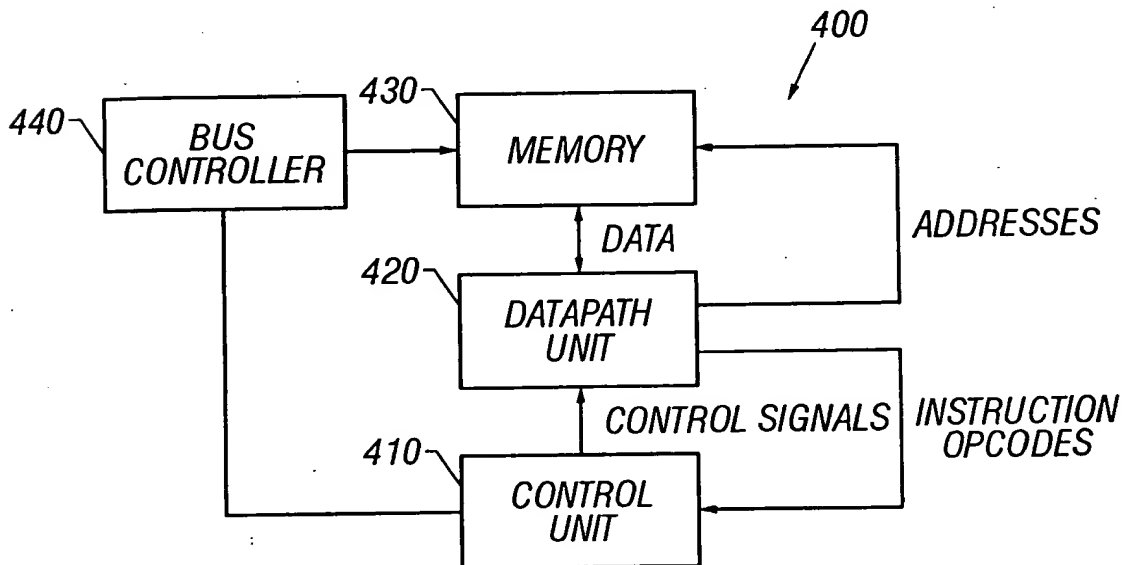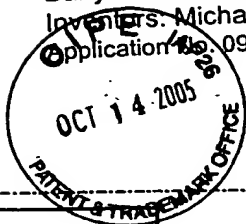Tel.: (650) 335-7194
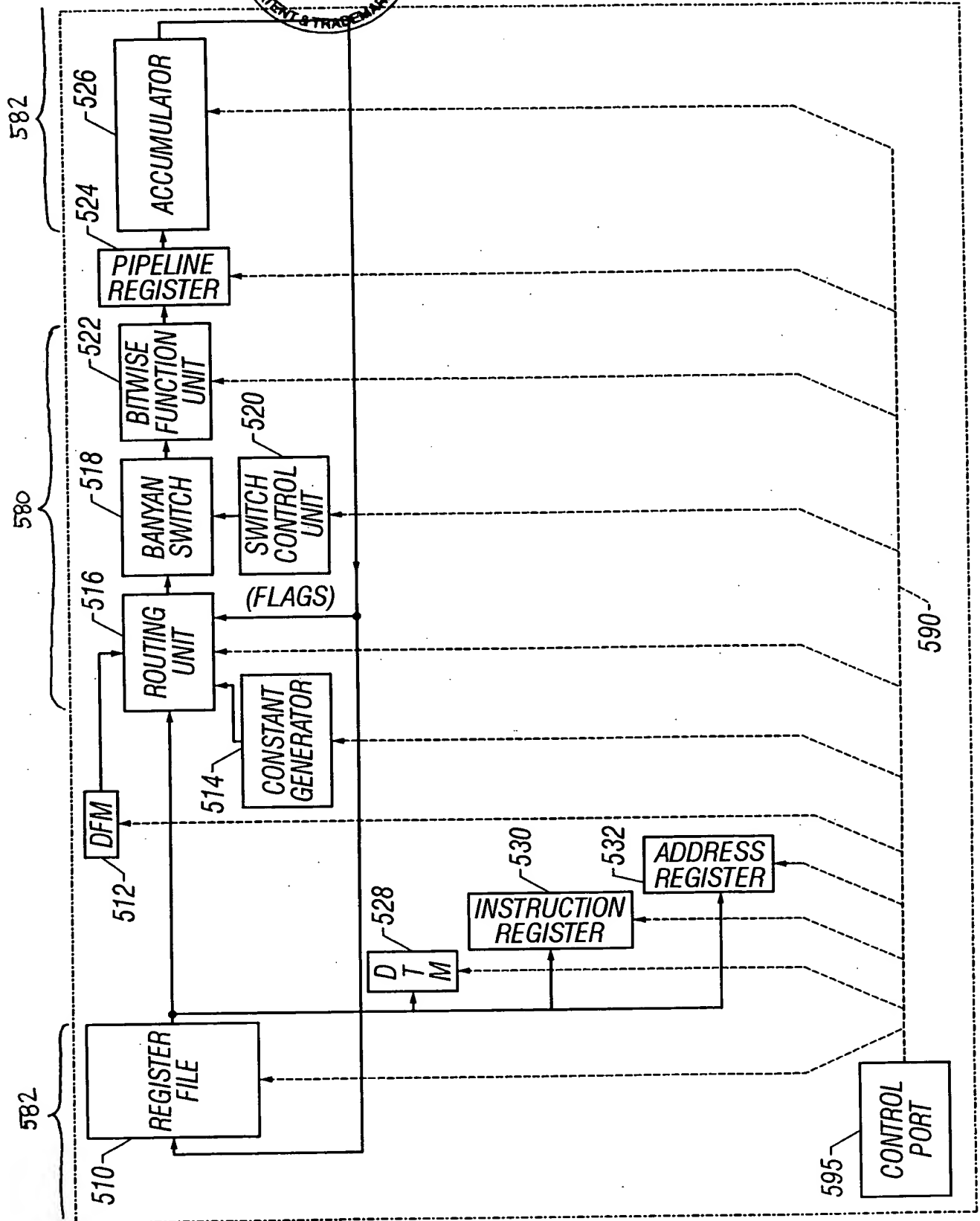Fax: (650) 938-5200

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**FIG. 3**



**FIG. 4**

**FIG. 5**